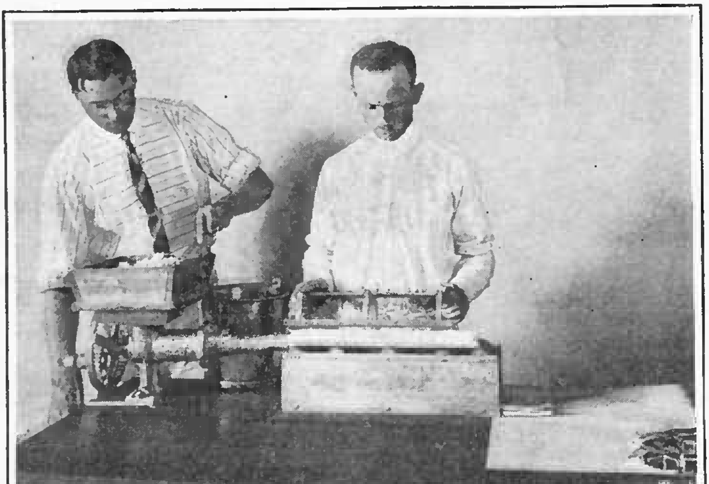
U. S. DEPARTMENT OF AGRICULTURE

FARMERS' BULLETIN No. 960

NEUFCHÂTEL AND CREAM CHEESE

FARM MANUFACTURE AND USE



NEUFCHÂTEL CHEESE is named after the town of that name in northwestern France. Cream cheese is usually made from milk having about 8 percent fat, while Neufchâtel is made from ordinary 4-percent milk. Cream cheese is also marketed in a number of combinations or flavorings, a popular form containing pimiento peppers.

This group of soft cheeses can be made with little trouble and at small expense for equipment. Although now largely produced in factories, they can be manufactured at home for family use. Frequently also the surplus milk of a small dealer can be marketed advantageously as Neufchâtel, cream, or pimiento-cream cheese.

While these varieties of soft cheese are highly regarded, their real food value is often unappreciated. When served alone or in any one of a multitude of dishes they are palatable and appetizing as well as nourishing.

Washington, D. C.

Issued July 1918
Revised October 1934

NEUFCHÂTEL AND CREAM CHEESE: FARM MANUFACTURE AND USE

K. J. MATHESON, *senior dairy manufacturing specialist*, and F. R. CAMMACK,[1] *agent in dairying, Bureau of Dairy Industry, in cooperation with Bureau of Home Economics*

CONTENTS

CHARACTERISTICS OF THE NEUFCHÂTEL GROUP OF CHEESES

CHEESES of the Neufchâtel group have been produced in the United States almost exclusively by a very few factories whose methods were not readily available to the public and whose extensive and high-priced equipment created the mistaken notion that it is not practicable to make these cheeses except on a factory scale. The methods of manufacture of Neufchâtel and cream cheese and their modifications are, however, simple, and the equipment needed for making them in small quantities is not elaborate; therefore an excellent opportunity is offered to produce at low cost a fresh, wholesome, and attractive food for home use. Since Neufchâtel and cream cheese may be marketed on a small scale, they often offer to dairymen an exceptional opportunity for the disposal of surplus milk.

The cheeses of this group are perishable, and their selling prices are somewhat higher, pound for pound, than those of the harder cheeses. In addition to their rich flavor and high nutritive value, they may be used with other foods to form many appetizing dishes. When cheeses of this group are to be sent to market, special equipment is necessary in order to obtain the greatest efficiency of time and labor in molding them into marketable form. An expenditure of from $35 to $40 will provide proper equipment for handling the cheese from several hundred pounds of milk. Such equipment should enable the dairyman to make and market cheese directly to the consumer at less cost and in fresher condition than that shipped from a more distant point. The fact that fresh cheese can be obtained readily will tend to increase its consumption.

[1] Mr. Cammack resigned June 30, 1920.

NOTE.—The first 18 pages contain material prepared by the Bureau of Dairy Industry; the following pages material prepared by the Bureau of Home Economics.

THE MANUFACTURE OF NEUFCHÂTEL AND CREAM CHEESE

In this bulletin the production of the Neufchâtel group of cheeses is considered from two points of view: (1) For home consumption and (2) for marketing on a small scale.

QUALITY OF MILK

The quality of milk is the first consideration in the production of good Neufchâtel or cream cheese. Milk which is sour or has undergone any abnormal fermentation should not be used. By the use of fresh, unripened milk without any perceptible change in the acidity, the normal fermentations which are necessary for cheese of high quality can be controlled. Milk for cheesemaking should not be allowed to absorb any odors or taints, and the garlic flavor, especially, should be guarded against.

CLEAN UTENSILS

Cleanliness of utensils is another essential in producing cheese of high quality. The following system is advised in washing milk and cheese utensils:

1. After using, rinse with cold water.
2. Wash with hot water to which a washing powder has been added. Always use a brush.
3. Rinse in hot water at a temperature above 150° F.
4. Steam or immerse in boiling water for 5 minutes.
5. Do not dry the utensils with a cloth, but place them in a clean place free from dust.

RIPENING THE MILK

The cheese is made by allowing the acid and rennet, or other curdling agent, to act simultaneously upon the milk. If great care has been used in the production and subsequent handling of the milk, the cheese may be made by adding rennet and allowing the milk to sour normally. A rather rapid development of acid is most desirable, as this tends to eliminate undesirable flavors, hastens the cheesemaking process, and prevents losses of the curd. The lack of uniformity in ripening often requires a more definite means of controlling the acid fermentation, which may be accomplished by the use of a starter.

THE USE OF STARTERS

A starter is a quantity of milk that has soured and contains large numbers of acid-forming bacteria. If the cheese is made in small quantities for home consumption, a starter is probably not advisable. The advantages of a starter over the natural souring are:

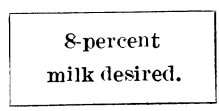
1. It hastens the coagulation of the milk.
2. It suppresses undesirable fermentations that may cause excessive losses of fat and curd.
3. It aids in suppressing undesirable flavors and produces more uniform cheese.

A starter of *Bacillus bulgaricus* may be used instead of the ordinary lactic-acid starter, but it is recommended only when there is a special demand for it.

STANDARDIZING THE MILK

In making cream cheese for the market, milk testing about 8 percent butterfat is most satisfactory. If 4-percent milk is available, it will be necessary to separate the cream from half of the milk and add this cream to the remaining half. This method gives satisfactory results for home manufacture, but for more extensive operations it is advisable to use a Babcock tester in order to standardize the milk accurately.

The following diagram illustrates an easy method of determining the proportions of milk and cream of different percentages of fat needed to make up 8-percent milk:



Cream and milk on hand.
34-percent cream.
4-percent milk.

Proportions to be used.
4 parts cream.
26 parts milk.

The desired percentage of fat in the milk, in this case 8, is placed in the center of the square. At the upper left-hand corner the percentage of fat in the available cream is placed, in this instance 34. Immediately below, in the lower left-hand corner, the percentage of fat in the available milk is placed, which in the instance cited is 4. Next subtract diagonally across the square the smaller from the larger numbers and place the differences in the upper and lower right-hand corners respectively. In the upper right-hand corner 4 represents the number of parts of 34-percent cream, and in the lower right-hand corner 26 represents the number of parts of 4-percent milk necessary to make 8-percent milk. If it is desired to make up a definite quantity of 8-percent milk, for example, 60 pounds, the procedure is as follows: 4 added to 26 makes a total of 30 parts of 8-percent milk. The quantity of 34-percent cream necessary is $\frac{4}{30} \times 60$, or 8 pounds, while the quantity of 4-percent milk is $\frac{26}{30} \times 60$, or 52 pounds.

PASTEURIZATION

It is not always practicable to pasteurize the milk to make cheese for home use, but if the cheese is to be marketed it is very desirable to do so. When milk is pasteurized for cheesemaking it becomes absolutely essential to use a starter to obtain uniform results. It is advisable, also, to use the milk as soon as possible after pasteurization. Ordinarily pasteurization is accomplished by heating the milk in a pail, can, or vat to a temperature of 145° F., and holding it at that temperature for 30 minutes, after which it should be quickly cooled to 75° before the starter is added for ripening. The advantages of pasteurization are as follows:

1. It destroys disease-producing organisms.
2. It tends to reduce losses and increase the yield.
3. It aids in eliminating undesirable flavors.
4. The quality of the cheese is more nearly uniform from day to day.

MAKING THE CHEESE

The process described is identical for Neufchâtel and cream cheese, except for a few minor differences, which will be mentioned.

SETTING

Unless otherwise noted, 30 pounds, or about 3½ gallons, of milk, is the unit used in these directions; that quantity can be handled conveniently in a shotgun can. For smaller quantities any enameled or heavily tinned pail is satisfactory.

If a starter is added, it is advisable to use about 1 percent. When the milk is not pasteurized it requires either more starter or a longer draining period.

Neufchâtel is made from ordinary milk, while the cream cheese requires milk containing about 8 percent of butterfat. Milk for Neufchâtel is warmed to 75° F., and one-half pint of starter is added and thoroughly stirred in with a long-handled spoon or milk agitator. Then 8 or 10 drops of commercial liquid rennet, diluted in half a cupful of cold water, is added to the mixture, thoroughly stirred, and the can of milk set away to coagulate at 75°. Powdered pepsin, which is cheaper than rennet, may be used instead, in which case a quantity equal to one-half of a medium-sized pea, dissolved in a cupful of cold water, is used. Fresh junket tablets also may be substituted for rennet. One tablet is dissolved in 10 tablespoonfuls of cold water and 3 tablespoonfuls of the solution used. For cream cheese a slightly larger quantity of the curdling agent is desirable.

For cream cheese the milk is warmed to 78° F., the process being the same in other respects. When a starter is not used in making either kind of cheese, the process is unchanged except that after being thoroughly stirred the milk is set away, at the temperature described, for several hours before the rennet or other curdling agent is added.

After the milk has been set away to coagulate it should be kept as nearly as possible at the same temperature. Under normal conditions, after about 13 to 16 hours, about one-half inch of whey collects on the surface of the curd or coagulum; on the top of the whey a scum of fine white curd particles sometimes collects. This formation of whey indicates a normal fermentation. When the fermentation is abnormal, the coagulum is more or less convex, puffed, or inflated, and there is little, if any, whey on the surface.

A gassy fermentation of the curd does not necessarily render a cheese unfit for consumption; but for best results, both as to flavor and economy in handling, that condition should be prevented. Under ideal conditions the milk usually begins to coagulate in the course of a few hours, but is allowed to stand undisturbed for from 13 to 16 hours. It is advisable to set the milk so that the curdling occurs during the night, and if the cans are not provided with covers they should be covered with a close-meshed cheesecloth in order to exclude dirt.

DRAINING

The curd should be distinctly acid to the taste at the time of draining. The most essential thing in making these kinds of cheese is to develop the acidity to a point where the curd will drain properly and

still the finished product will not have too high an acidity. If the acidity is too low, the curd is apt to be "rubbery" and the whey will not escape freely. Experience alone, under a given set of conditions, will best determine the most favorable time to drain the curd.

After the setting period, when whey has collected upon the surface of the coagulum, or when the milk is firmly clabbered, the contents of the can or pail are poured upon a strong drain cloth which may be spread over a rack resting on a receptacle for whey (p. 12). The can may be shaken slightly before the milk is poured, in order to loosen any curd which has a tendency to adhere to the sides or bottom. Unbleached cotton sheeting, which can be obtained in yard widths, has proved to be the most satisfactory material for drain cloths. For a small-scale operation the cloth may be thrown over a pail, can, or wash boiler and the ends tied securely about the draining receptacle. The curd or coagulum should remain undisturbed in the cloth 2 or 3 hours, after which it should be worked toward the center of the cloth in order to hasten the draining and get it in better condition for handling. Drainage is allowed to continue until most of the visible whey has escaped and the curd appears rather dry as compared with its former mushy condition. Then the four corners of the cloth should be drawn diagonally across and tied. For home consumption, and especially when it is not cooled, the curd should be allowed to drain for a longer time before being pressed.

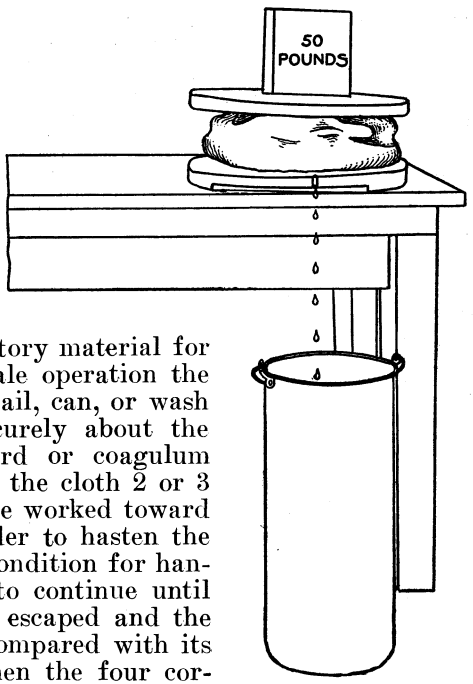


FIGURE 1.—An improvised cheese press.

CHILLING THE CURD

While the cooling of the curd is very desirable, it is not absolutely necessary. The object of cooling is to facilitate the more rapid expulsion of whey during pressing, and check losses of fat in the whey. Chilling hardens the curd so that it does not pass so readily into the meshes of the drain cloth and thereby interfere with and retard the expulsion of the whey. The bags of curd are placed on ice, or cracked ice is placed about them and left for several hours or preferably overnight.

PRESSING

After cooling, several bags of the curd are piled together between two boards and a weight of 50 pounds placed on top (fig. 1).

Frequent rearrangement of the bags will hasten the process. After this weight has been left on the cheese overnight, the curd should be in flat cakes. For Neufchâtel it is preferable to press the curd from 30 pounds of milk until the pressed curd weighs 4½ pounds, while for cream cheese it should weigh about 5½ pounds. Special care should be taken in determining the yield of cheese in order to obtain a uniform quality from day to day, which can be done by weighing the curd. The manner and length of time of pressing determines, in a large measure, the texture of the cheese. If a screw press is used, the curd may become too dry and gummy, but under ordinary conditions there is little danger if improvised equipment is used (fig. 2).

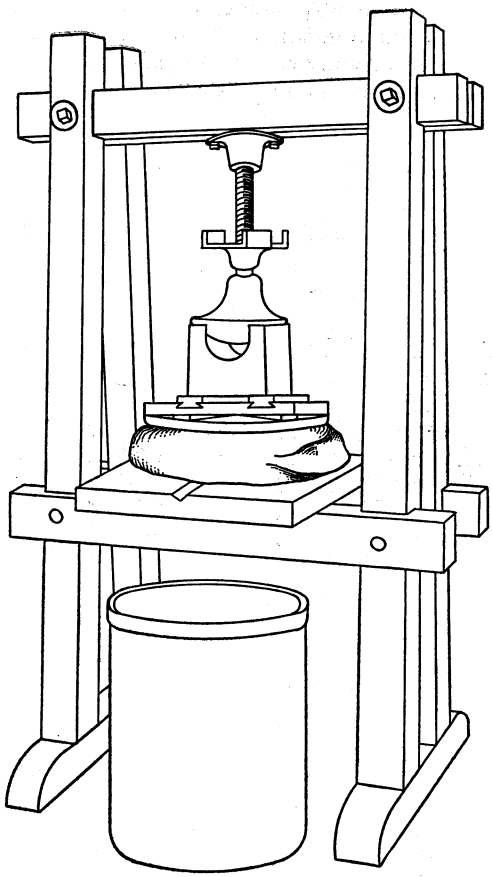


FIGURE 2.—A screw press.

WORKING AND SALTING

After having been properly pressed, the cakes of curd are salted and worked with a potato masher or butterworker, or run through a food chopper to produce a smooth, buttery consistence.

Fine, dry salt is sprinkled over the curd at the rate of about 2 or 2½ ounces to 10 pounds of curd, or about 2 level tablespoonfuls to the curd from each 30 pounds of milk. The quantity of salt may be varied to suit the individual taste; the quantities recommended, however, usually give the best satisfaction. If the curd is worked with a potato masher, the addition of salt aids in obtaining the proper smoothness of the cheese.

When cheese is made for home consumption it may be placed in a glazed crock or porcelain dish immediately after being salted and held at a temperature as near 50° F. as possible until consumed. Under favorable conditions it will keep in good condition for from 6 to 12 days. When cheese is kept a few days at a temperature of 60° to 70° it will become disagreeably sour. It is most palatable immediately after it is made, for then it is fresh, soft, and sweet. When very cold, or after having been kept for some time, it does not have so fine a flavor.

COMBINATIONS WITH NEUFCHÂTEL AND CREAM CHEESE

Finely chopped pimiento peppers may be mixed with either Neufchâtel or cream cheese at the time of salting. Such cheese has a mild though pronounced flavor and is very popular for sandwiches and salads. The pimientos seem to have a certain preservative effect and tend to cover up "off flavors" that may develop. About 1 pound of the chopped pimientos is added to 12 pounds of cheese, or about 6 ounces for the cheese from 30 pounds of milk.

While there are numerous other cream-cheese combinations, there are two that are worthy of especial note—olive-pimiento cream and Roquefort cream cheese. Both of these flavoring ingredients should be added at the rate of 1 part to 10 parts of cream cheese. When Roquefort cheese is uniformly incorporated with cream cheese it gives to the combination a rich and pleasing flavor very similar to Roquefort cheese, though milder.

MOLDING

Cheese for home consumption need not be molded. When the cheese is marketed a special device is necessary in order to shape the cheese into a commercial package. Neufchâtel, cream, and pimiento cheeses require a special style of package. While there are numerous devices for molding, many of them are not suited for meeting market demands. As a result of considerable experimenting, the attachments described below were devised to fit the ordinary food chopper and proved to be very satisfactory for handling the several kinds of cheese.

For molding small quantities of cheese the following equipment is desirable (see figs. 6 to 10):

1. A food chopper.
2. A hopper.
3. Two molding attachments for chopper.
4. A cheese conveyer.
5. A cheese cutter.

When used for molding both the knives and the plate should be removed from the chopper, otherwise the cheese will go through with great difficulty. The cheese hopper is a boxlike arrangement clamped to the top of the food chopper to prevent the scattering of particles of cheese upon the worktable. The cheese is poured into the hopper at short intervals, since it is not advisable to keep the hopper more than half full, or the feed screw will not force the cheese so readily through the hopper. If the hopper is full the cheese may become too "gummy" and will not only be difficult to force through the chopper but will adhere to the long-handled spoon used to push the lumps of curd into the machine. It is advisable to use a spoon in order to keep one corner of the hopper free of the cheese and, by allowing the escape of air, facilitate the grinding of the cheese.

The lips of the molding attachment are fastened to the chopper by means of a ring. The attachment for molding Neufchâtel cheese is cylindrical and is about 1½ inches in diameter at its delivery end. The cheese, forced through this attachment, comes out in the form of a roll or cylinder.

71627°—34——2

Pimiento cheese is forced into a special glass jar smaller than a jelly glass or a paraffined wood-fiber container held horizontally over the end of the Neufchâtel attachment so that the cheese reaches the end of the container and flattens out without difficulty (fig. 3). If the pimiento cheese is to be used in a short time, the wood-fiber containers are especially recommended, as they are less expensive than glass jars. If the cheese is marketed directly to the consumer, the glass jars may be returned and used again.

The attachment for cream cheese is rectangular at its delivery end. By its use the cheese may be molded into smooth, ribbonlike bands

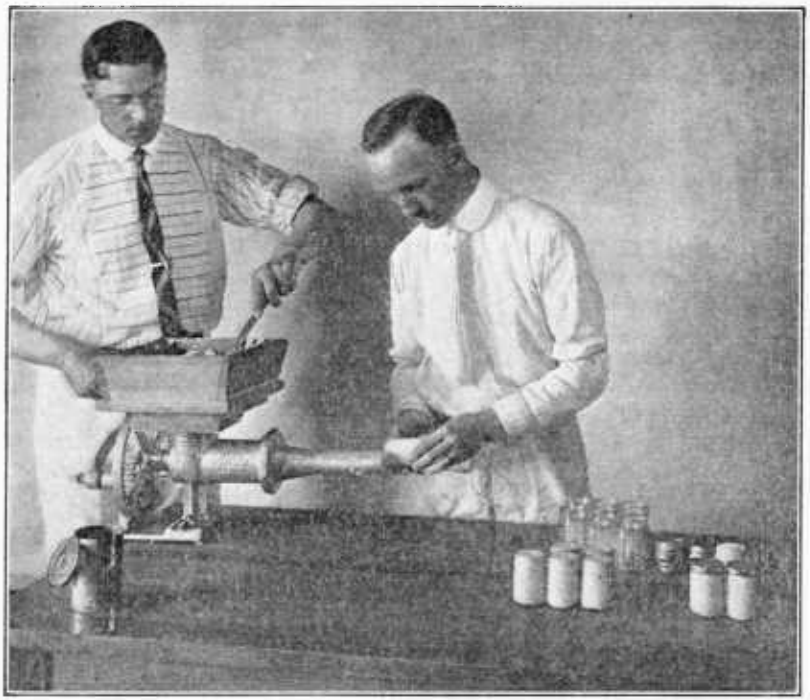


FIGURE 3.—Filling jars with pimiento-cream cheese.

which, as in the case of Neufchâtel cheese, may be cut with a wire into pieces of the desired size.

The cheese is delivered from the attachment on a canvas conveyer, supported by rollers, which turn with sufficient friction to cause the plastic curd to be firmly pressed together as the cheese is automatically pushed forward (fig. 4). The first cheese that passes through the attachment often "frills"; that is, it presents an irregular surface, but later the difficulty becomes less marked, and the cheese comes out with a surface well defined and smooth. "Frilling" occurs more often in molding cream cheese than in Neufchâtel.

CUTTING THE CHEESE

Cream cheese and Neufchâtel cheese may be cut into cakes of the desired size by means of fine wires drawn over a rectangular-shaped

framework (fig. 10). The use of this simple equipment makes it possible to cut half a dozen cheeses simultaneously and prevents delay, so that one person may do the grinding while another cuts and wraps the cakes.

WRAPPING THE CHEESE

After the cakes have been cut they are slowly carried along by the carrier and eventually fall upon a flat form upon which tin-foil wrapping papers are laid. These papers may be held in place by a cleat or clamp. In many cases it is more convenient to take the cheese directly from the carrier, but when the person who does the wrapping is kept very busy the platform may serve as a place where

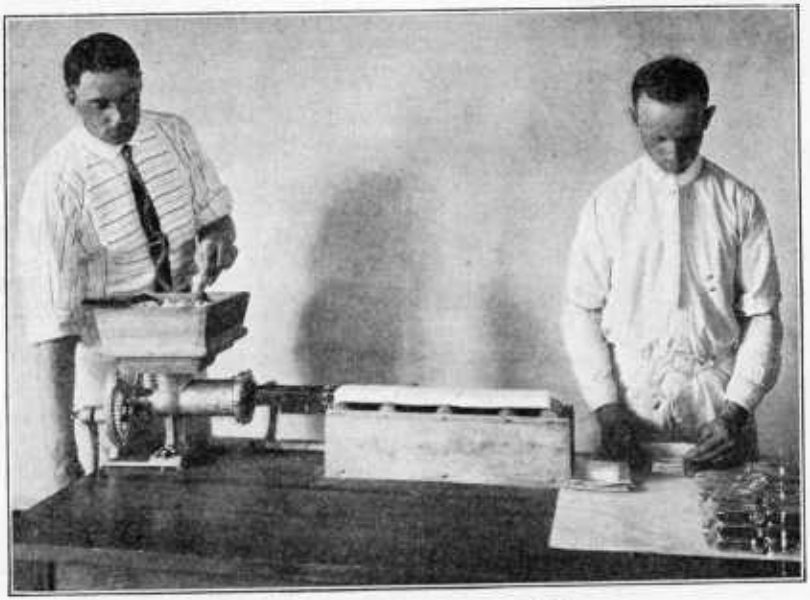


FIGURE 4.—Molding and wrapping cream cheese.

several cakes may accumulate, thus allowing the grinding operations to be continued. While one person is engaged in filling the hopper and molding the cheese another is kept busy cutting and wrapping. The cheese is wrapped by placing it on the paper, folding each side of the paper over the cheese, and turning the ends down so as to cover the cheese completely (fig. 4).

YIELD

One hundred pounds of milk containing 4 percent fat should yield from 13 to 16 pounds of Neufchâtel cheese, while 8-percent milk should give an average yield of from 17 to 20 pounds of cream cheese.

The yield may be influenced by the following factors:

1. The composition of the milk.
2. The water content of the cheese.
3. The acidity of the curd during the cheese-making process.
4. Whether the cheese is made from pasteurized milk.
5. The manner of handling the curd.

With milk testing less than 4 or 8 percent fat, a smaller yield and a lower grade of cheese will be obtained. Although there may be slight seasonal fluctuations in the solids of milk, yet for the most part the yield of cheese, other conditions being equal, is almost directly proportional to the percentage of fat. Variations in yield of cheese may also be caused by mechanical factors, such as longer pressing.

Neufchâtel cheese is sometimes made from skim milk, in which case it is used for cooking and baking purposes. Commercially, there are other grades of Neufchâtel made from one-half or two-thirds skim milk. Such cheeses are labeled as made from "partially skimmed milk" or "skimmed milk" as the case may be.

PACKAGES

Tin-foil or aluminum-foil wrapping paper which has a parchment paper inside is generally used in wrapping cream and Neufchâtel cheeses, since it gives each package a bright, uniform, and attractive appearance (fig. 5). Great care should be taken to wrap each cake neatly and securely in order to exclude the air as much as possible. Any "frilling" or other irregularities may be corrected by drawing the foil tightly about the cheese. Careful and skillful wrapping tends to increase the length of time the cheese is salable. The yellow or amber-colored mold which often spreads over the cheese should be prevented as much as possible not because it may render the food harmful or poisonous but because it causes deterioration and renders the cheese less appetizing.

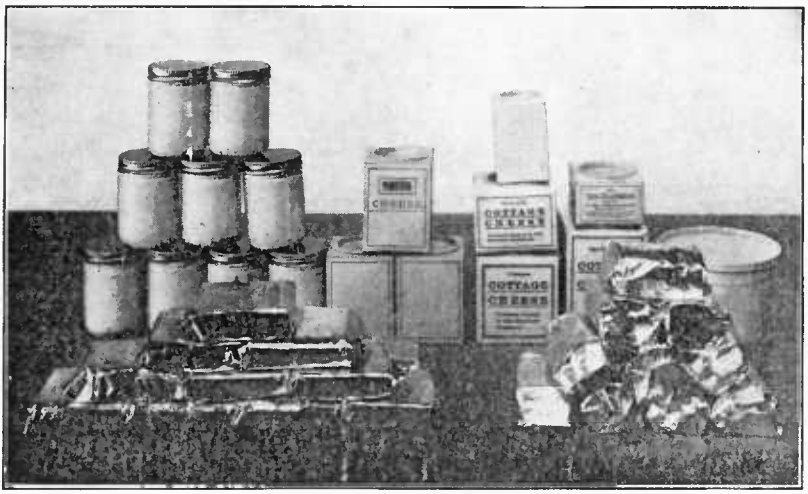


FIGURE 5.—Types of packages.

The standard Neufchâtel package is cylindrical, about 1½ inches in diameter by 2¾ inches long, and weighs about 2½ ounces net. Standard packages of cream cheese are about 2¾ by 2⅛ inches and three-quarters of an inch thick, and have a net weight of about 3

ounces. The pimiento cheese is marketed in 3- or 6-ounce glass jars, each packed full and covered with a disk of paraffined paper and screw cap.

MARKETING

Neufchâtel, cream, and pimiento-cream cheeses are sold by the box. The wholesale price of a cheese is usually 2 or 3 cents less than the retail price. Cream cheese retails for about 8 cents a package, Neufchâtel for 4 or 5 cents, and pimiento cream at 15 to 20 cents a jar.

POSSIBILITIES

The desirability of making these varieties of cheese on a small scale and successfully marketing them depends upon the skill of the maker and his ability to obtain a direct and ready market for his product. When cheese is made and delivered once or twice a week, a dairyman is in far better position to serve the public by selling a perfectly fresh product than the larger manufacturers, working at a distance, who are obliged to dispose of their cheese several days after it is made, and who must pay the additional expense of boxing and shipping. If the cheese is marketed directly upon a small scale it is not necessary to put it into the flat boxes, as is the case if it is handled commercially. The cheeses may be disposed of satisfactorily by placing them in one large box and piling one cheese upon another. When cheese of this type is delivered upon a milk route the use of a special box provided with two compartments, one for ice and the other for cheese, is advisable during the warm periods of the year. Pimiento-cream cheese, because of its keeping quality, is particularly adaptable to small-scale operations. When sold in glass jars it is sold as readily as the product of the larger manufacturers. With a direct outlet, arrangements may be made to use the jars again and thereby reduce the cost of marketing.

When suitably situated it should be practicable for many dairymen to supply cheese to a neighboring town at good prices for their milk and extra trouble. It should be especially feasible for the milk dealer to dispose of his surplus milk in the form of cheese; in fact, in some cases for some of these kinds of soft cheese he would receive as much as or more than for the milk. By beginning in a small way the milk dealer should be able to develop a trade in fancy cheeses, such as cottage, Neufchâtel, cream, and pimiento cream, and by selling direct to the consumer he could compete successfully with larger manufacturers.

KEEPING QUALITIES OF THE CHEESE

When wrapped in foil and put into a cold place immediately after making, cream and Neufchâtel cheeses should keep from 6 to 12 days without developing objectionable flavors; usually cream cheese seems to keep somewhat better than Neufchâtel. If pimiento-cream cheese is placed in the customary jars and held at 50° F. or below, it should be still palatable at the end of a month. These products develop a sourish taste rather quickly when held at a high temperature. The temperature, therefore, is by far the most important factor in regulating the keeping qualities of the cheese. There may be considerable

variation in both the salt and water content of the cheese without causing much deterioration.

EQUIPMENT FOR MAKING NEUFCHÂTEL AND CREAM CHEESES

Little equipment is needed for making these cheeses for home consumption, and many satisfactory substitutes may be found for that mentioned. When the cheese is to be made for home use a thermometer, a yard of cotton sheeting, and a small amount of rennet or junket tablets are necessary and will need to be purchased. When the cheese is to be marketed on a large scale a greater outlay is desirable in order to handle the cheese efficiently. The estimated cost of the various items is as follows:

1 food chopper	$13.50–$16.50
6 shotgun cans	6.00
6 drain racks	6.00
2 molding attachments	3.00
1 carrier	2.00
1 thermometer	1.00
1 hopper	.75
1 cheese cutter	.75
6 yards of drain cloth	1.25
1 pail	1.00
1 agitator or stirrer	.40
2 spoons, long handled	.50

DESCRIPTION

FLOATING DAIRY THERMOMETER

The use of a reliable and accurate thermometer is imperative if uniform results are to be obtained. A thermometer of this kind is not expensive, and when not in use should always be kept in the case.

STARTER BOTTLES

Pint milk bottles, which may be covered with glass tumblers, are needed for holding the starter, although the size of the containers depends, of course, upon the quantity of cheese made. Pint fruit jars also can be used, and may be covered with bowls.

SHOTGUN CANS

These cans are usually 9 inches in diameter, 20 inches high, and hold about 4 gallons of milk. For work on a small scale a 10-quart, heavily tinned or enameled pail may be used satisfactorily.

RENNET AND PEPSIN

Commercial liquid rennet and powdered pepsin have been found to be satisfactory curdling agents. Fresh junket tablets also produce good results.

MILK AGITATOR

A stirrer is desirable to cause a uniform distribution of rennet or starter and to aid in preventing a too rapid rising of the cream. A long-handled spoon may be used if only a small quantity of cheese is made.

DRAINING RACK

The rack may be rectangular, 13 inches wide, 36 inches long, and 10 inches deep. The sides and ends are each made of three strips of

wood attached to the corner posts. The corner posts extend 1½ inches beyond the strips at top and bottom, with the top rounded, so that a ring may fit over them. The bottom slats fit loosely into notches and are removable for washing purposes. The materials required are 4 corner posts 1½ by 1½ by 10 inches, 9 strips 1 by ⅜ by 36 inches, and 6 strips 1 by ⅜ by 12¼ inches, notched to receive bottom slats, all made of pine. A cloth is fastened upon each frame and the contents of one can poured upon each cloth. For small-scale operations an orange crate or a boiler or pail may serve the same purpose.

DRAIN CLOTH

Unbleached cotton sheeting is recommended for this purpose. A fine-meshed cloth gives strength and aids in preventing losses of fat and casein. The size of the cloth depends upon the nature of the draining rack. Each cloth should be 45 inches long and a yard

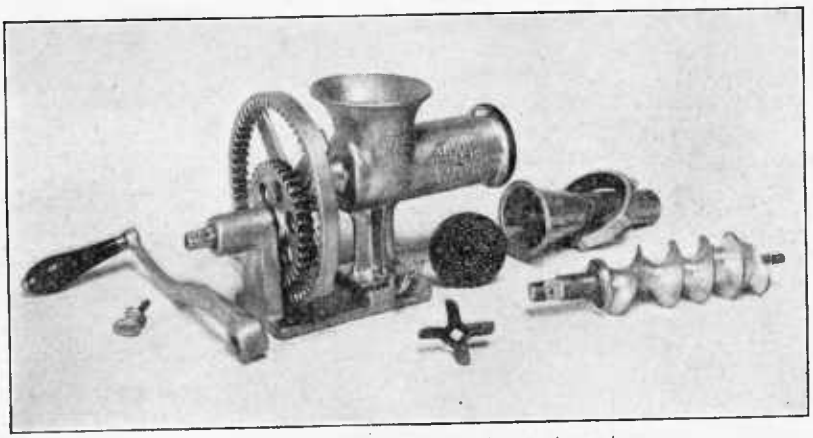


FIGURE 6.—Grinding and molding equipment.

wide, with the ends hemmed. After use each should be quickly and carefully washed and dried in order to extend the period of its usefulness.

PRESS

If a screw press is available, its use is to be recommended. A 50- or 60-pound weight, such as a can of water or bucket of stones, left upon the curd overnight usually proves to be satisfactory (figs. 1 and 2).

CURD WORKER

For small-scale operations a bread mixer or a potato masher may be used to give the curd proper consistency and to incorporate the salt. When the work is on a larger scale, a butterworker or food chopper will serve the same purpose.

FOOD CHOPPER

A food chopper with special attachments and a hopper are essential for molding the cheese into the desired forms (fig. 6). Depending upon the quantity of cheese handled, satisfactory food choppers

may be obtained in three sizes, costing about $13.50 to $16.50. The smaller machines may be used in handling Neufchâtel and pimiento-cream cheeses, but cream cheese requires the large size for making the customary flat packages. The large machine is to be recommended if the weekly output of cheese amounts to a few hundred pounds, although the medium-sized machine would probably do the work as effectively, only more slowly and with more labor.

CHEESE HOPPER

The hopper consists of an open box 3 inches deep, made of maple, with sides sloping outward about half an inch. The box has a hole in the bottom 3⅛ by 3⅝ inches. To the bottom of the box a board five-eighths of an inch thick is screwed, which has a hole corresponding to that of the box. The hopper is fastened to the food chopper by means of a beveled strip of wood and button, as indicated in figure 7. The base of the box will probably have to be grooved in order to allow the wheel to turn without friction. The materials required are (1) two quadrangular-shaped pieces of wood 3 inches high, five-eighths of an inch thick, whose tops measure 9⅜ inches and the bottoms 8 inches; (2) two pieces of similar shape, except that the tops measure 11½ inches and the bases 10¼ inches; (3) one piece 10⅞ inches long, 10⅛ inches wide, and three-quarters of an inch thick; (4) one piece 9⅜ inches long, 7 inches wide, and three-quarters of an inch thick; and (5) one piece 7 inches long, 4⅜ inches wide, and five-eighths of an inch thick.

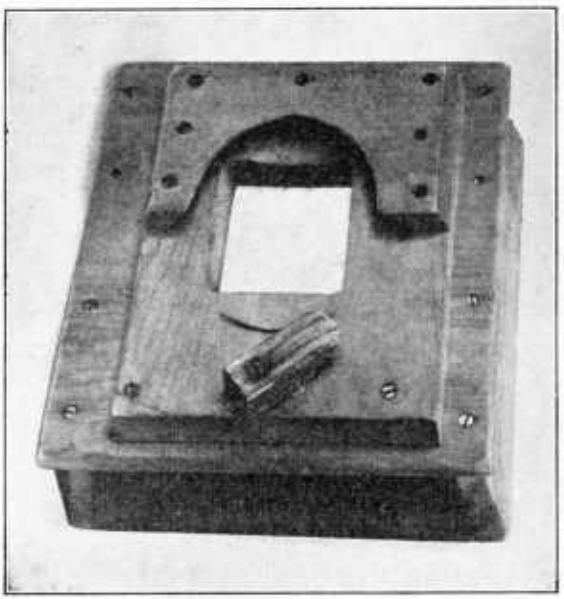


FIGURE 7.—Under view of cheese hopper, showing method of attachment.

NEUFCHÂTEL ATTACHMENT

The attachment for molding Neufchâtel and pimiento-cream cheeses consists of a tin form having a conical shape with a tube attached. The cone has a 2¼-inch base which gradually tapers down to a tube whose diameter is 1½ inches (fig. 8). The distance from the base of the cone to the tube attached is 3¼ inches; the tube is about 5 inches long. A vertical lip about one-quarter

of an inch across makes it possible to connect the tube to the food chopper; the attachment fits into the ring of the chopper.

CREAM-CHEESE ATTACHMENT

The cream-cheese attachment consists of a ring to which a rectangular-shaped molding tube is soldered (fig. 8). The base of this tube is 2⅛ inches wide and fifteen-sixteenths of an inch thick. The delivery end of the tube, which is 2⅛ inches wide and three-quarters of an inch thick, is cut back one-third of an inch at each corner, and V-shaped pieces of tin are removed. The lips of the tube are then drawn together until there is about one-sixteenth of an inch of free space at each corner.

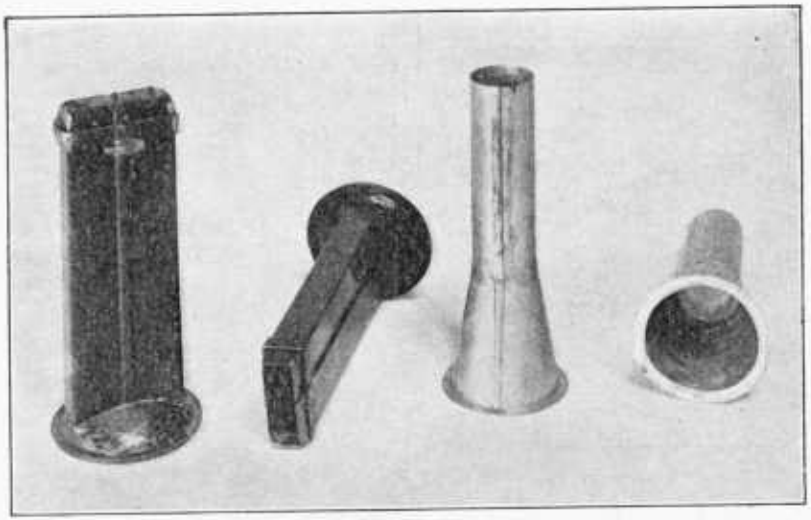


FIGURE 8.—Molding attachments for Neufchâtel and cream cheese.

BELT CONVEYER

The belt conveyer used in removing the cheese as it leaves the attachment is shown in figure 9. It is a rectangular-shaped box, 20 inches long, 6 inches wide, and 4¾ inches deep, with the ends and top removed. Five bearings fit into the notches on the side and holes on the other side in two strips of iron fastened to the upper edges of the two open ends of the box. A 3½-inch canvas belt runs snugly though not tightly upon the rollers. The materials required are two pieces of maple 4¾ inches wide, one-half inch thick and 20 inches long; four oak rollers 4⅜ inches long and 1¾ inches in diameter; one oak roller 4⅜ inches long and 1½ inches in diameter. The rollers have a $\frac{1}{16}$-inch clearance and are beveled one-eighth of an inch from bearing to outer face. In addition, two 20-inch strips of galvanized iron 1 inch wide and one-eighth of an inch thick are needed. In both ends of one of these strips of iron there are four outward-slanting notches which are one-half inch deep and one-eighth inch wide, and evenly spaced between the ends there are three

additional vertical notches of the same size. There are eleven ⅛-inch holes in the second iron strip, corresponding to, parallel with, and of the same height as the bottom of the notches of the first strip. The boards and strips of iron are joined together by means of screws.

CHEESE CUTTER

A cheese cutter consists of a rectangular framework of poplar over which seven fine wires are drawn (fig. 10). The wires are fastened by means of iron pegs or screws to the outer edge of 2 half-inch strips 17 inches long. The strips are 5 inches apart, parallel, and are supported by 3 vertical pieces of wood 5 inches long, 3 inches wide, and one-half inch thick. Each of these supports is hollowed out in order to give plenty of space for cutting the cheese. The

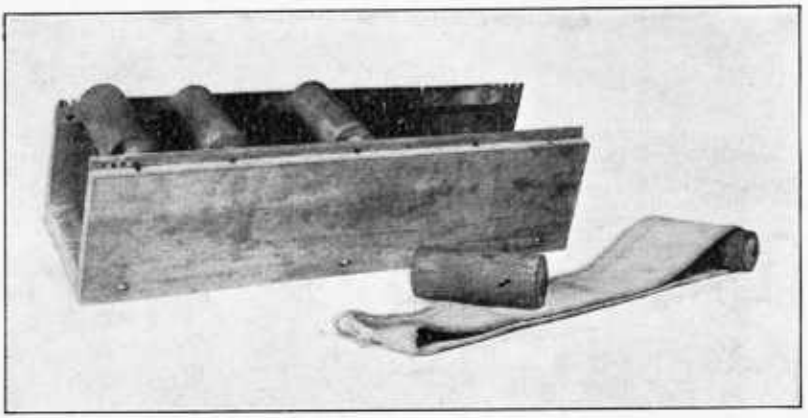


FIGURE 9.—Belt conveyer.

vertical supports are held in place by means of a single flat strip 15 inches long, seven-eighths inch wide, and one-quarter inch thick. The wires are placed 2¾ inches apart and the supports 6¾ inches apart. All connections are made with 1-inch screws.

TIN-FOIL PAPER

Tin foil covered with parchment paper is generally used to wrap the cheese (cream or Neufchâtel), although of late aluminum foil has been used quite extensively. The dimensions of the foil are 4½ by 6 inches, and it is purchased by the pound.

USE OF NEUFCHÂTEL AND CREAM CHEESE IN THE DIET[2]

From the dietary standpoint, Neufchâtel and cream cheeses are valuable for protein, fat, phosphorus, and calcium. Since the American diet is likely to run low in calcium, it is well to keep in mind that all cheeses are a good source of this much-needed mineral. As

[2] Prepared by Bureau of Home Economics.

these cheeses contain a high percentage of milk fat, they are rich in vitamin A. They probably also contain some vitamin G.

Neufchâtel and cream cheeses are suitable in any course of a meal. They may be part of the appetizer at the beginning of a dinner or of the dessert at the end, and in any course between. Because they are soft in texture, mild in flavor, and molded into attractive forms, they can be served quickly and easily. A popular way is with toasted bread or crackers and jam, marmalade, or a sour relish, for contrast in flavor. Or they may be combined with fruits and vegetables in almost unlimited ways for salads and sandwiches. Hot dishes may also be made with these cheeses if the supply is particularly abundant. The sharper flavored harder cheeses, however, are generally better for cookery. These soft cheeses are so convenient and appetizing when served simply that it is best to make the most of these points.

The following recipes and suggestions illustrate a few of the many ways of serving these soft cheeses:

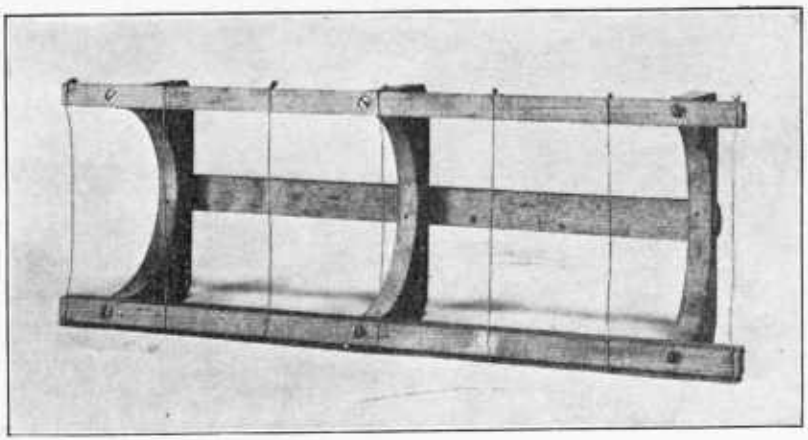


FIGURE 10.—Cheese cutter.

CRACKERS AND CHEESE WITH RELISHES OR FRUIT PRESERVES

Serve Neufchâtel or cream cheese with crisp crackers, thin dry slices of oven-toasted bread, or biscuit and a tart vegetable relish or fruit preserves. for an hors d'oeuvres, or appetizer at the beginning of the meal, a sour relish is generally preferred. If the cheese and crackers are for dessert, accompany them with sweet jam, marmalade, preserves, or jelly. Ginger pears, preserved ginger root, Bar le Duc currants, orange marmalade, or apricot and pineapple jam combine especially well with the cheese flavor (fig. 11). Put the preserves, jelly, or relish in the center of a large plate, cut the cheese into pieces and arrange them around the preserves, and place the crackers around the outside. Another attractive way of serving this combination for afternoon tea is to spread the cheese on crisply toasted crackers, leaving a hollow in the cheese toward the center and dropping into it a bit of the preserved fruit or jelly. These give a festive touch to the tea table and yet can be prepared very quickly. The cheese softens the crackers on standing; so do not combine them until a short time before serving.

Several of the combinations of cheese with chopped peppers, onions, and other highly flavored foods can be used on toasted crackers as appetizers or for afternoon tea.

SANDWICH OR SALAD MIXTURES

CHEESE WITH OLIVES, PIMIENTOS, OR GREEN PEPPERS, AND NUTS

Mix equal quantities of soft cheese and chopped olives, pimientos, and nuts, or any one or two of these if all three are not desired. Add salt and a little onion juice if liked.

Spread on slices of white or whole wheat bread. For salids this mixture may be formed into balls, or stuffed into fresh green peppers from which the centers have been removed, or into canned pimientos, and sliced. These may be served alone on lettuce with salad dressing, or used to garnish many other kinds of salads.

FIGURE 11.—Three attractive ways of serving Neufchâtel and cream cheese: Cream cheese put through a ricer and served with crackers and jam as a simple dessert or for afternoon tea; cheese cake; stuffing for green peppers or celery in salad.

CHEESE AND PICKLE

Mix the cheese with finely chopped dill pickle, chow-chow, chili sauce, or any other desired pickle mixture. Use as sandwich filling or as a spread on crackers, or in salads.

CHEESE WITH CHOPPED PARSLEY, WATERCRESS, OR OTHER VEGETABLES

Into the soft cheese, work finely chopped parsley, watercress, lettuce, spring onions, chives, radishes, cucumber, celery, or any other salad vegetable. Add salt and any other seasoning desired, such as onion or lemon juice.

Use this mixture as a sandwich spread, or for salads pile it lightly on crisp lettuce or form it into balls as suggested under "Cheese with olives", etc. The balls may also be rolled in chopped parsley or watercress.

CHEESE AND CELERY

Clean celery thoroughly, wipe the stalks or allow the water to drain off, cut them into short lengths, and fill the hollows with any one of the cheese mixtures

given under the two preceding headings. Serve this stuffed celery as an appetizer at the beginning of the meal, as a relish with the main course, or as a garnish with salad.

CHEESE AND TOMATOES

Use any one of the mixtures of cheese with olives, peppers, nuts, or chopped vegetables described above. Spread this on slices of tomato and use these in sandwiches or place them on lettuce and serve as salad. Or for salad, scoop out part of the inside of the tomatoes after they are peeled, stuff them with the cheese mixture, and arrange them on lettuce. Or make a little mound of the cheese mixture on lettuce and arrange around it a tomato peeled and cut like an apple into quarters.

PRUNES, DATES, OR FIGS STUFFED WITH CHEESE

Split cooked prunes, take out the seeds, and stuff the cavities with Neufchâtel or cream cheese plain or mixed with chopped nuts. Serve on lettuce with salad dressing. Stuff the dates in this same way after they have been split and the seeds removed. Canned figs or cooked dried figs may be split and used in this same way.

DRIED FRUIT AND CHEESE MIXTURES

Wash prunes, dates, raisins, or dried figs or apricots, and put them through the food chopper using the fine knife. Mix the ground fruit with about twice as much cheese. Add a little salt, and chopped nuts if desired. Roll this into balls and use as suggested in salads or on crackers for afternoon tea or as the filling for sandwiches.

CHEESE WITH CANNED PEACHES, PEARS, OR CHERRIES

Fill the hollows of canned peaches or pears with Neufchâtel or cream cheese, plain or mixed with nuts, dried fruits, or one of the chopped vegetables suggested, and serve on lettuce with salad dressing. Or make a little mound of the cheese on the lettuce and put slices of peaches or pears around it. Large white canned cherries with the pits removed or stewed dried apricots may be combined with the cheese in this same way.

CHEESE AND PINEAPPLE

Arrange slices of raw or canned pineapple on lettuce, and into the center of each slice drop a ball made of Neufchâtel or cream cheese mixed with chopped nuts or green pepper or pimiento, and seasoned with salt. This is sometimes called "Honolulu salad."

Or after the pineapple slices are arranged on the lettuce, cover them with the cheese pressed through a potato ricer, and sprinkle on a little salt and paprika.

Finely chopped pineapple mixed with the cheese makes an excellent spread for sandwiches or for toasted bread or crackers for afternoon tea.

APPLE SURPRISE SALAD

Select tart apples of uniform size. Core, pare, and simmer them whole in sirup made in the proportion of 1 cup sugar to 2 cups boiling water. If desired, add a few red cinnamon drops to the sirup to flavor and color the apples. As soon as the apples become tender, remove them from the sirup carefully so that they will keep their shape. When they are cold, fill the cavities with Neufchâtel or cream cheese seasoned with salt and paprika or mixed with chopped nuts. Place the apples on lettuce and serve as salad with any desired dressing. Or serve them as dessert with some of the apple sirup around them.

CHEESE DRESSING FOR SALADS

1 Neufchâtel or cream cheese.
½ cup salad oil.
3 to 4 tablespoons lemon juice.
½ teaspoon salt.
Tabasco sauce, onion juice, a bit of garlic, or grated horseradish, for seasoning.

Mash up the cheese, add the oil, and beat with a Dover egg beater until thoroughly mixed. Add the other ingredients and continue to beat until the mixture is smooth and creamy. Use this dressing in the same way as mayonnaise or any other salad dressing. For fruit salads it is particularly delicious if whipped cream is added.

CHEESE AND JAM OR JELLY SANDWICHES

Spread slices of bread rather thickly with Neufchâtel or cream cheese and on one of them put a layer of jam or jelly. Press the slices of bread together. These sandwiches are also excellent toasted.

CREAM OR NEUFCHÂTEL CHEESE TOASTED

1½ cheeses.
1 egg.
¼ teaspoon salt.
Tobasco or Worcestershire sauce.

Cream the cheese and add the beaten egg yolk, the salt, and enough Tabasco, Worcestershire, or any other highly seasoned sauce to give flavor. Mix well, fold this into the beaten white of egg. Toast thin slices of bread on one side. Cover the untoasted side with the cheese mixture. Slices of mild-flavored onions may be laid on the bread before the cheese mixture is added, if desired. Brown the cheese slightly under slow heat and serve at once. This is an excellent luncheon or supper dish when served with bacon, or the mixture may be used on small rounds of toast or on crackers for afternoon tea.

CHEESE FILLING FOR GINGERBREAD

2 Neufchâtel or cream cheeses.
2 cups chopped dates.
1 cup chopped nuts.
½ teaspoon salt.
Cream.

Mash the cheese and mix with it enough cream to give it the consistency of a soft filling. Add the dates, nuts, and salt, and mix well. Split open a sheet of hot gingerbread, spread the cheese mixture on the lower half, replace the upper part and press it down lightly. The quantity of cheese filling given here is enough for a sheet of gingerbread about 8 by 10 inches. Serve the gingerbread at once while still hot.

FROZEN CHEESE WITH FRUIT

2 Neufchâtel or cream cheeses.
¼ cup milk.
1¼ cups powdered sugar.
¼ teaspoon salt.
½ cup chopped canned pineapple, preserved cherries, dates, figs, or raisins.
½ teaspoon vanilla.
1 cup double cream.

Break up the cheeses and mix the milk with them. Add the sugar, salt, and chopped fruit and vanilla and mix thoroughly. Whip the cream until it is stiff and fold in the cheese mixture. Pour into a mold, and freeze. Serve in slices. Or if preferred, leave the chopped fruit out of the mixture and serve it as a garnish on top. A whole preserved fig on a round of the frozen cheese is a particularly attractive combination.

This same mixture unfrozen is also an excellent filling for charlotte russe made with ladyfingers or sponge cake.

CHEESE CAKE

½ pound cream cheese.
2 cups fine rolled toasted bread crumbs.
2 tablespoons butter.
2 tablespoons sugar.
¼ teaspoon salt.
2 eggs.
½ cup sugar.
½ teaspoon salt.
1½ tablespoons flour.
½ cup thick cream.
½ teaspoon vanilla.

Mix thoroughly the bread crumbs, butter, 2 tablespoons of sugar, and one-quarter teaspoon salt, and pat down in a smooth layer over the bottom and sides of a deep pie plate or pudding pan. To the well-beaten egg yolks add the one-half cup of sugar, one-half teaspoon salt, cheese, flour, and cream. Beat until smooth; then add the vanilla and the beaten egg whites. Pour into the pan lined with the bread-crumb mixture. Bake in a very moderate oven (325° F.) for about 45 minutes, or until set.

ORGANIZATION OF THE UNITED STATES DEPARTMENT OF AGRICULTURE WHEN THIS PUBLICATION WAS LAST PRINTED

Secretary of Agriculture	HENRY A. WALLACE.
Under Secretary	REXFORD G. TUGWELL.
Assistant Secretary	M. L. WILSON.
Director of Extension Work	C. W. WARBURTON.
Director of Personnel	W. W. STOCKBERGER.
Director of Information	M. S. EISENHOWER.
Director of Finance	W A. JUMP.
Solicitor	SETH THOMAS.
Agricultural Adjustment Administration	CHESTER C. DAVIS, *Administrator.*
Bureau of Agricultural Economics	NILS A. OLSEN, *Chief.*
Bureau of Agricultural Engineering	S. H. MCCRORY, *Chief.*
Bureau of Animal Industry	JOHN R. MOHLER, *Chief.*
Bureau of Biological Survey	J. N. DARLING, *Chief.*
Bureau of Chemistry and Soils	H. G. KNIGHT, *Chief.*
Office of Cooperative Extension Work	C. B. SMITH, *Chief.*
Bureau of Dairy Industry	O. E. REED, *Chief.*
Bureau of Entomology and Plant Quarantine	LEE A. STRONG, *Chief.*
Office of Experiment Stations	JAMES T. JARDINE, *Chief.*
Food and Drug Administration	WALTER G. CAMPBELL, *Chief.*
Forest Service	FERDINAND A. SILCOX, *Chief.*
Grain Futures Administration	J. W. T. DUVEL, *Chief.*
Bureau of Home Economics	LOUISE STANLEY, *Chief.*
Library	CLARIBEL R. BARNETT, *Librarian.*
Bureau of Plant Industry	KNOWLES A. RYERSON, *Chief.*
Bureau of Public Roads	THOMAS H. MACDONALD, *Chief.*
Weather Bureau	WILLIS R. GREGG, *Chief.*

U.S. GOVERNMENT PRINTING OFFICE: 1934

For sale by the Superintendent of Documents, Washington, D.C. - - - - - - Price 5 cents